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ABSTRACT

This guide is designed to serve as an aid to developing a career education program using carpentry as a vehicle for expanding skills and aspirations of K-12 girls and boys. Each section is intended to be used as a resource in planning the program. The section on supplies and equipment provides recommendations as to quality, quantity, and storage of tools. The next section (exploratory phase) provides practical information on how to begin workshops designed to give students and teachers opportunity to use hand tools safely and with ease. Focus is on hammering, sawing, and drilling procedures. The carpentry lessons that follow explain how each basic hand tool can be presented to students. Since the emphasis is on introducing specific information about tools to K-3 children, the lessons are written as if the teacher were talking to the students. Lessons presented in the conceptualization phase section present skill information, e.g., how to nail two pieces of wood together. The curriculum section shows how carpentry can be expanded into the classroom to relate to the total curriculum. "People Who Use Tools" provides the unifying theme for the seven lessons in the first part of this section. The second part, "Stories to Grow By," is made up of lessons on a multiethnic selection of books used to expand students' aspirations beyond ordinary sex role and occupational role stereotypes. A list of supplementary resources and photographs for classroom use are also included. The final section briefly evaluates a project which made use of these materials and makes recommendations for developing a similar project. (TA)

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ED149013

The House that Jill and Jack Built

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PREFACE

The carpentry program was conceived by Susan Groves, Coordinator of the Women's Studies Program, Berkeley Unified School District and by Rebecca A. Mills, President of Advocates for Women. Funding was provided by a grant from the Rosenberg Foundation. The purpose of the program was to expand skills and aspirations of girls and boys.

The program grew out of needs expressed several years earlier based on the results of an attitude questionnaire developed by the Women's Studies Program. Boys had no difficulty discussing their aspirations yet had great difficulty projecting family life. For instance, while one boy could imagine a day in his life as a football player he had difficulty imagining mending his uniform or taking care of his home needs as an adult. Girls, on the other hand, had no difficulty imagining family life yet had trouble describing their aspirations. One girl who said she wanted to be a forest ranger omitted any mention of her work when describing an actual day in her life. In general, the attitude questionnaire showed that boys' needs related to taking care of themselves as individuals in the home while girls' needs related to acquiring physical and mechanical skills. In response to these needs, the Women's Studies Program developed several programs including a number of pilot carpentry programs at different schools. The most recent carpentry project then was an outgrowth of an effort to develop a process that would broaden aspirations rather than reinforce stereotypes.

There were two areas of focus for the project, the carpentry workshops and the classroom. For the workshop component women carpenters were provided as role models teaching carpentry, a skill traditionally blocked to women. The classroom component was an effort to extend carpentry into the classroom as a vehicle for developing curriculum that would expand career options for students.

John Muir, a K-3 school in Berkeley, was designated as the model school for the project. The principal of John Muir, Mildred Messinger, as site director, helped to develop and coordinate the program. The unique design for the '75-'76 program was largely due to her ideas. Four teachers who volunteered for the project made a commitment to developing a non-sexist, multi-cultural curriculum around the carpentry program. From March through May of 1976 the teachers brought their second and third grade classes to workshops, participating with their whole classes two consecutive days each week, one hour per session. There was a good deal of skepticism on the part of the staff regarding bringing their entire class to the workshop. Some teachers felt that too many students would result in fighting over tools and accidents, while still others felt that it was best to have a pull-out program run by an "expert". Each teacher and her whole class were involved for two reasons, first because it was felt that a teacher learning along with her class would assume greater responsibility and make more of a commitment to the program and secondly, because the involvement of a teacher and her entire class facilitated the integration of carpentry skills into the development of the total curriculum. It was of the utmost importance to design a program in such a way as to make teachers feel confident and in control when using tools. Moreover, it was important for teachers to be strong role models for their students as women teachers introducing a non-traditional skill to girls and boys.

FOREWARD

The use of tools is one of the oldest activities ever invented by the human mind. It is for me one of the most elegant. Traditionally the use of building tools has been an activity of men, while the use of homemaking tools has been an activity of women. When this traditional use of tools prevails, students of both sexes are prevented from realizing that both women and men equally can use all these tools.

I feel that one of the major goals of schooling is to enhance conceptualization and competence. For the twenty-five years of my own teaching career, I have used hand carpentry tools as an activity in nursery schools, elementary schools, parent education classes and inservice for teachers. I was excited and pleased when it became possible to have this particular project at my school. It provided tools and curriculum that the school didn't have as well as imparting new skills and attitudes to a significantly large group of teachers and children. Persons who learn to use hand carpentry tools with some degree of technical skill experience feelings of competence about themselves in their environment. They are able to build things they want and need. Such an accomplishment is basic to human life.

It was hoped that children and teachers would develop the attitude that competence in using these tools is available to all, in varying degrees by age but *equally* by sex and race. Also, we hoped participants would respect the necessity of being proficient in basic school subjects in order to produce things wanted, in order to spend time in interesting and personally satisfying ways, and to be of service to others.

Out of our experiences, I would like to send these messages to teachers who pick up and read this curriculum guide. I hope that reading it will create feelings of enough bravery to give it a try. I would suggest that teachers, and especially women, who haven't had opportunities to learn to use hand tools, go to a safe place and try it. Those who can't quite go it alone can take a friend. I feel that it is important that participants make an effort to provide pupils with the rewards of personal competence in a non-sexist, non-racist environment.

Last, but not least, if you get such a project started and supplied, visit lumber yards, hardware stores and other such businesses as much as you can rather than using catalogs exclusively. Women doing this have opportunities created for them whereby they can break down sex role and racial stereotypes about who uses tools. Be advised that you are likely to have more of these experiences than you may want or need. Please take seriously our advice to get the best tools you can afford, even when others ask you if you really want "real" ones.

My thanks go to the Women's Studies Program, Berkeley Unified School District, Advocates for Women for collaboration on developing and implementing the project, and to the Rosenberg Foundation for providing financial assistance.

I want to thank very much the teachers who worked in the project.

Myra Akins
Sue Fry
Barbara Hendrickson
Morfea Triggas

They are outstanding role models to the children in their classes. Without their support

and participation, pleasures and pains over children's behavior, as well as acceding to our demands for "input", "feedback", and all the other bothers projects put on participants, we would have nothing to tell you.

My special thanks to Margo Nanny, the teacher in the project. She is energetic, devoted, and a skillful teacher of young children. She is an outstanding example of a person being supportive to children who then were willing to take wide ranging risks in trying to produce something from their ideas. She and I enjoyed a close relationship while we were devising "lessons", ordering tools and gathering supplies. I believe the best times were the hours we spent together in hardware stores and lumber yards, working out ways to get our questions answered at the same level of seriousness that men customers enjoyed.

Margo and I thank those business clerks where we shopped who finally allowed their consciousnesses to be raised to a level where they could help us seriously and accurately. Salespersons finally stopped asking us if we really wanted such "good tools" (these are the ones that cost a lot and that real carpenters use). In time, everyone we dealt with came to agree that what we wanted to accomplish required just that.

Last and most, I'd like to say a few words about the 100 children. They labored, conceived, collaborated, conceptualized, and produced in such abundance that they presented us, at every session we had, many examples of the miracle of human endeavor.

Mildred Messinger
Principal/Site Director
John Muir School
Berkeley, California
June, 1976

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How To Use This Manual

This guide was written as an aid to developing a career education program using carpentry as a vehicle. It may be helpful to read it through first in its entirety to get a general notion of why and how the project was developed, implemented, and evaluated. As you plan your program, use each section as a reference. The section on *Supplies and Equipment* will give you recommendations as to quality, quantity and storage of your tools. The next section *Exploratory Phase* provides practical information on how to begin your workshops. The *Carpentry Lessons* that follow explain how each basic hand tool was presented to students. Since the emphasis is on how to introduce specific information about tools to K-3 children, the lessons are written as if you were talking to your students. Workshop periods generally started with a period of directed instruction on a new tool or skill, followed by students working independently on projects of their choice. Assistance was usually provided on a one-to-one basis as students worked.

The Conceptualization phase followed the first few weeks of exploratory activity. Students were required to make plans for new projects prior to coming to carpentry class. Lessons included in this section are samples of skill information presented.

The Curriculum section shows how carpentry can be expanded into the classroom to relate to the total curriculum. *People Who Use Tools* provides the unifying theme for the seven lessons in the first part of the Curriculum section. The second part of this section, *Stories To Grow By*, is made up of sample lessons on a multi-ethnic selection of books used to expand aspirations. Additional materials can be found in the list of Supplementary Resources. A set of photographs for classroom use are also included, together with related activities.

The final *Evaluation* section discusses the extent to which the project goals were realized and recommendations for developing a similar project.

Supplies and Equipment

When ordering tools and supplies, it is important to order those tools that are of the highest quality and are the most durable. The expense is well worth the investment. To facilitate classroom follow-up, two mobile carts were designed to accommodate equipment and supplies. The following considerations are important when designing a cart:

1) amount of space available
2) quantity and type of tools to be used
3) ease of getting tools in and out of cart
4) visibility of tools, frequency of use
5) number of people using cart
6) traffic patterns when using cart
7) storage and locks

Some things are more durable and should be readily accessible to students such as hammers, saws, screwdrivers, try squares, brace and bits, drills, nails. Other things that are more expendable and/or expensive should be the responsibility of adults such as screws, hinges, wheels, dowels, extra blades; additional tools such as coping saw, keyhole saw, should be checked out as needed.

Consistent with a program that would be safe for teachers to use with students, Mildred decided to limit the workshops to using only hand tools. Each mobile cart contained the following tools and supplies:

Tools fitted into a permanently attached rack —

- 11 cross-cut saws, 1 back saw
- 12 C-clamps, 4"
- 6 try squares
- 4 pairs of pliers
- 4 pairs of scissors
- 6 screwdrivers
- 4 braces
- bits — 4 sets of 9 each
- 12 hammers

"Buy at least two 6" C-clamps if budget allows

Open space below fitted rack holders contained rulers, safety blocks, sand blocks, and extra hardware. The cart itself, made out of wood with a fitted cover and a lock, was on wheels with two handles in order to make it easy to move from class to class. The outside of the cart can be burned with a propane torch to make it attractive and inviting for students (see working drawing, p. 00 for instructions on how to build carts). One cart remained in the workshop room and the other was available for teachers to take back to their classrooms.

To supply the carts, Margo and Mildred ordered tools from Childcraft Education Corporation, Catalog of Early Childhood Learning Materials, 1974-75, Box 5038, Vallejo, California 94590 (phone-area code 707 643-2808).

		Quantity	Unit Price	Total
	Hammer — 7 oz.	20	$ 6.50	$130.00
6W116	Saw — 16" Crosscut	20	5.50	110.00
6W131	Hand Drill	4	9.95	39.80
6W133	Bits — Set of 9	4	1.50	6.00
6W139	Pliers	4	1.95	7.80
6W141	Try square	4	2.95	11.80
			Total	$305.40
			6½% tax	19.85
				$325.25

Workbenches were ordered from California Correctional Industries, 1020 — 12th Street, Sacramento, California 95814. (California Correctional Industries does business only with tax-supported institutions.)

Catalog Number	Item	Quantity	Unit Price	Total
8942	18" Primary workbench	3	$13.50	$ 40.50
8943	24" Primary workbench*	12	15.00	225.00
			tax	17.28
			Total	$282.28

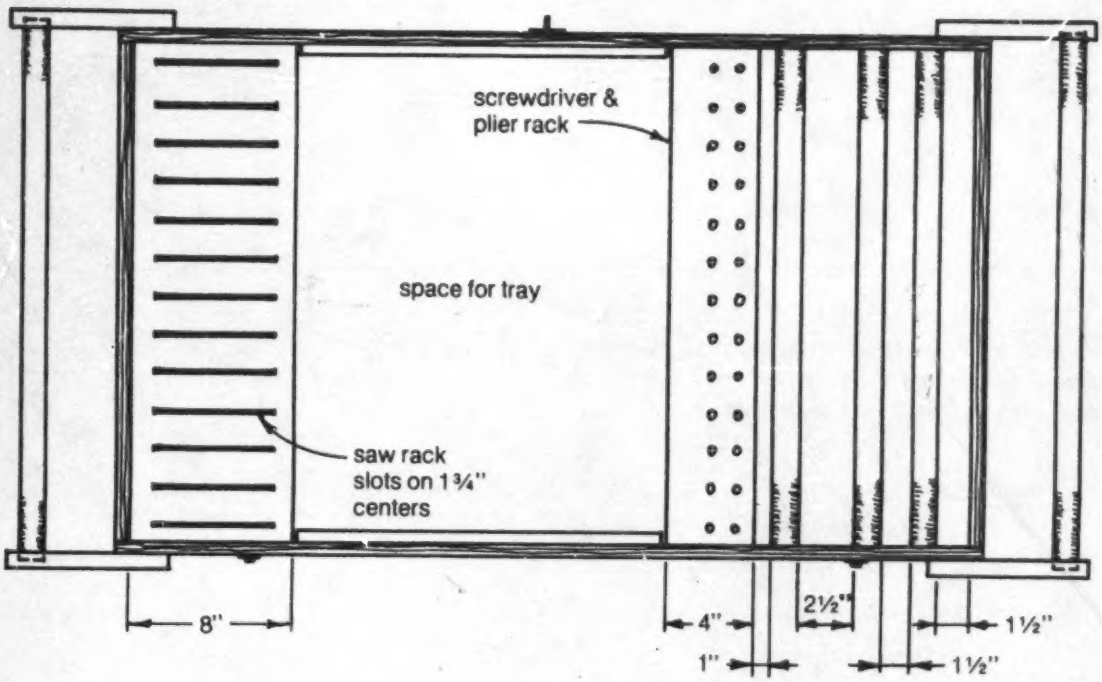
"15" or 18" workbenches are recommended instead of 24" workbenches which proved to be too high for primary students.

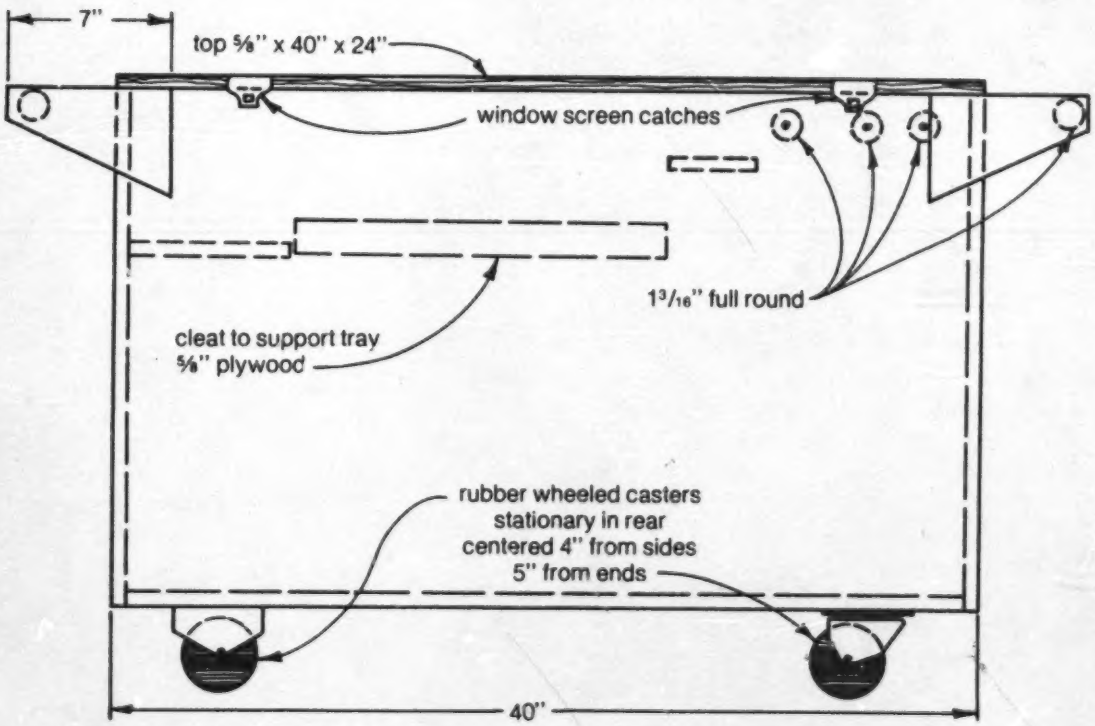
A room was arranged for the carpentry workshops approximately the size of a small classroom. The room consisted of long tables (about 6' in length) and benches which we used until the workbenches arrived. Margo built three shelves running the length of the front of the room to hold supplies to be used during class. A smaller room about a third the size of the shop area was used for storage of supplies and equipment such as lumber, doweling, additional tools and hardware.

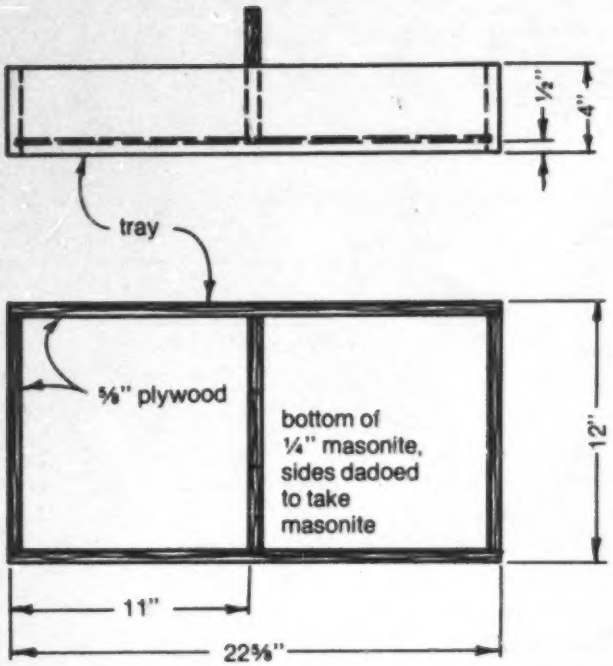
Approximately $1,000 was budgeted for lumber and hardware with the idea that consultants would have ample variety of sizes and kinds of wood for designing projects and that more time could be spent in planning rather than in "scrounging" for inexpensive or free wood.

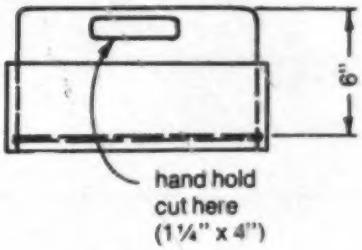
The carpentry workshop area was equipped with the following:

- Table containing jars of nails of varying sizes, 2d, 4d, 6d
- Box for placing orders, paper, pencils
- Sign-out sheet for tools
- Drill
- Brace and bit
- Coping saw
- Keyhole saw
- Cans of wheels of different sizes (large cans available from cafeteria)
- Boxes of scrap wood
- Mobile cart with tools
- Cabinets (locked) for storing student projects

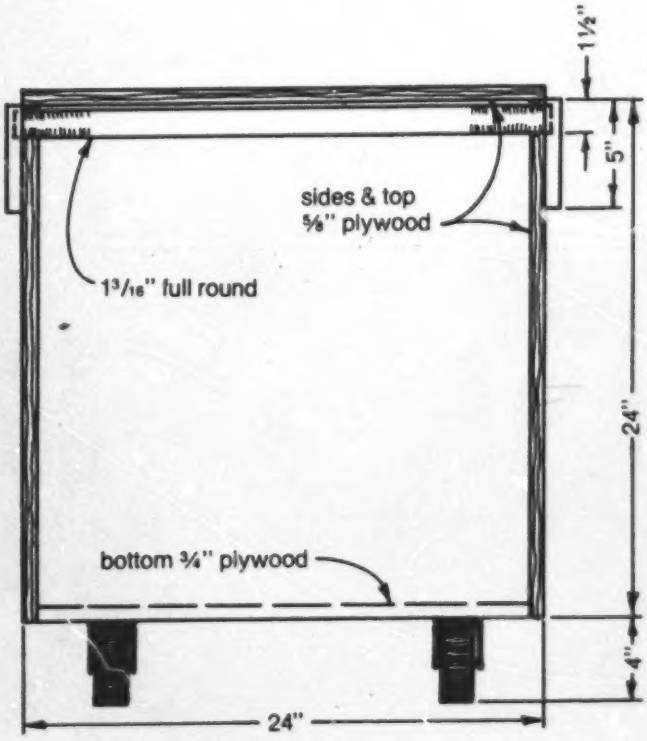

screwdriver &
plier rack
space for tray
saw rack
slots on 1¾"
centers
8"
4"
2½"
1½"
1"
1½"


7"
top ⅝" x 40" x 24"
window screen catches
1³/₁₆" full round
cleat to support tray
⅝" plywood
rubber wheeled casters
stationary in rear
centered 4" from sides
5" from ends
40"





Drawing and Construction by Reed Hamilton



Exploratory Phase

The first phase of the workshops, beginning March 23rd, was an exploratory or curiosity phase, designed to give students and teachers an opportunity to use hand tools safely and with ease. Directed lessons during these first four to five weeks focused on hammering, sawing, and drilling, and also on procedure and safety. Margo and Mildred used the following format as a guide to developing lessons for the large group consisting of 20-24 students, the classroom teacher and sometimes a student teacher and/or parent volunteer:

1. Review of names and/or functions of different tools
2. Brief discussion and evaluation of last class period emphasizing areas going particularly well or special problems such as students forgetting to put a saw under the bench to avoid accidents while not in use
3. New instruction or introduction of a new skill or new tool
4. Reminders of procedures and safety practices
   a. procedure for ordering wheels, screws, hardware
   b. traffic patterns
   c. where to find materials and supplies
5. Distribution of projects (stored in locked cupboards and labeled by class and room number). Students usually labeled their project and/or wood pieces before turning them in at the end of a workshop session
6. Independent work time — Students get their work, tools, and wood needed, place orders, and set up work space
7. Margo, Mildred and teacher(s) give assistance to those who need it while other students work independently
8. Five minute warning before end of work period
9. Class meeting for brief sharing of projects, comments on class period
10. Discussion of special problems brought out during the sharing period
11. Clean-up — Rotate students who volunteer to clean-up. Choose girls and boys to work together on clean-up. Encourage girls to do tasks that require physical effort as well as manual and small motor skills. Encourage boys to do tasks that not only require strength but dexterity as well, and clerical skills such as writing orders, labeling projects and sweeping

Carpentry Lessons

Introductory note to teachers:

The following lessons are written in dialogue form as Margo introduced skills and concepts to students. Try each step as you go along first by yourself or with a friend and then again as you demonstrate for your students.

Lesson 1 — Sawing

Materials Needed

For a class of 24 second or third graders —

- 12 16" cross cut saws
- 12 C-clamps, 4"
- 12 safety blocks, 1" x 3" x 5"
- 4 try squares
- benches for sawing

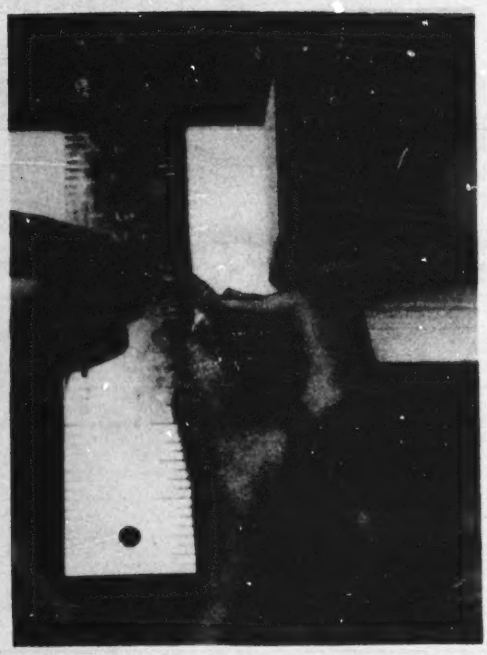
Procedure

1. Has anyone used the try square before? (hold it up)
   What did you use it for? We will be using try squares to measure and to make straight lines for sawing wood. See how it makes a right angle? You can also use a try square to see if your work is square when you join two pieces of wood.
   Can anyone find a similar angle in the room? (blackboard, window, table, etc.)
   (Note: You might want to follow up with lessons on angles and measuring in the classroom.)

2. Place the try square at the edge of the wood. Draw a line with the try square. The line I drew will be used as a guide when I saw the piece of wood.

3. (Hold up a safety block.) Does anyone know how to use this piece of wood? It's called a safety block. What does the name tell you? Can you guess what the red tape is for? The safety block is used to protect your hand when you are sawing.

4. (Hold up a C-clamp.) Demonstrate how to use it to fasten the safety block and wood to the workbench.
   See how the wood must stick out far enough at the end of the bench so that you don't cut the bench when you saw.
   Make a "sandwich" using the C-clamp so that students can see how it works. First put the wood down flat on the bench. Then attach the safety block on top of the wood using the C-clamp to hold the block and the wood firmly in place.



Mark your wood using a try square before sawing

5. Try fastening the C-clamp on one side of the bench and then the other side. Which side works best? You will need to think about which hand you use for sawing so that the C-clamp is on the appropriate side. Otherwise the clamp will be in the way.

6. Watch where my hands are as I am sawing. One hand is behind the C-clamp (away from the saw) while the other hand is holding the saw. I am holding the saw at an angle rather than straight up and down. (The bench should be low enough to get comfortable leverage and force when sawing.)

7. I am going to make three starting cuts upward and then saw the rest of the wood using slow even down stroke cuts. The end of the piece of wood tends to split if the strokes are too fast or forceful.

8. Since I am finished cutting this piece, but I'll be using the saw in a few minutes, I am going to put it *under* my workbench. When I'm done with the saw for the period where should I put it? (back in the cart)

Safe — Place one hand behind safety block

Unsafe

Lesson 2 — Hammering

Materials Needed

- 12 hammers (7 oz.)*
- 12 C-clamps, 4"
- wood of varying lengths and widths
- nails of varying sizes
- containers for holding nails (jars or cans)
- paper for placing orders
- cart containing tools and supplies

**For a class of 20-24 second and third graders, we found that 12 hammers and 12 C-clamps were usually adequate since students used a variety of tools and not everyone needed hammers at the same time.*

Procedure

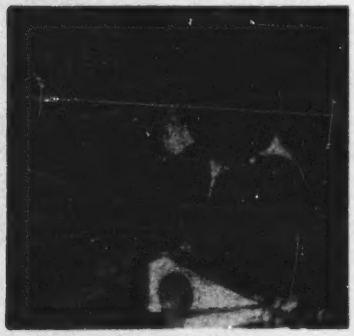
1. Hold up a hammer. Hold it up close to the head. Try hammering. What happens? Hold it close to the other end, far back. What happens? Now try holding it at the thickest part. What happens?

2. Hammer two pieces of wood together with nails of different lengths. What happens when the nail is too long? too short? just right? (It is long enough to go through both pieces of wood without sticking out.)

3. What happens if you hold the wood and hammer on your lap? on a table? on a bench? You need to hammer on a place low enough to have enough leverage, preferably a bench.

4. Who would like to come up and demonstrate hammering a nail? (Be sure to call on both boys and girls.)

5. Stack up wood underneath one side so that the side you are hammering into is supported securely. (see picture)



Hold hammer at thickest part

Stack wood for support while hammering

Lesson 3 — Brace and Bit

Materials Needed

- 2 braces
- 4 sets of bits (9 in each set)
  - 1" bit
  - ¾" bit
  - ½" bit

Procedure

1. Hold up the brace and bit and ask, does anyone know the name of this tool? Have you ever used the brace and bit? What did you use it for?

2. You will be using it to make holes. Some students may refer to it as a drill. What is the difference between a brace and bit and a drill? (The drill makes smaller holes.)

3. Hold up a bit. See how it fits into the middle part of the brace that turns. Hold up a 1" bit and make a circle with your fingers to show students approximately how large a hole it will make. The 1" refers to the diameter of the hole or the distance across the circle your fingers make. You may want to follow up in the classroom with lessons on diameters, radius, simple fractions, etc. Hold up the ¾" bit and ask, do you think the hole this bit makes will be larger or smaller than the 1" hole? Hold up the ½" bit and ask, what does the ½" refer to?

Using a brace and bit

4. Insert the bit into the brace by loosening the middle part just enough to put the bit in but not far enough so the parts will fall out. See how the "teeth" in the middle grip the bit and hold it in place. You can practice putting bits of different sizes into the brace.

5. Tighten the middle part of the brace to hold the bit until it won't tighten any further. Then it is ready to use. If you have trouble find a partner. One person can hold the brace while the other person inserts the bit. Or if you don't have a partner, try holding it between your legs to steady it.

6. Make a hole in a piece of wood so students can see how the brace is used. Notice how I am putting a piece of wood underneath the wood you are making a hole in to avoid making a hole in the table or bench and to make a smoother hole (one that won't splinter around the hole) underneath.

7. Now that the hole is finished, I can turn the brace in the opposite direction to get it out. I don't need to tug at it.

Lesson 4 — The Drill

Procedure

1. Here is another tool that is almost like the brace. Does anyone know what this tool is called? (a drill)

2. Has anyone used it before?

3. How did you use it? (To make small holes in wood)

4. Make a hole in a piece of wood so that students can see how a drill is used. Put a scrap of wood on the bottom and a piece of wood for the hole on top. Fasten them together with a C-clamp.

5. This tool works almost the same way as the brace does. Hold the drill straight up and down when you use it so that your hole will be straight.

6. Try holding the drill at an angle. What happens to your hole?

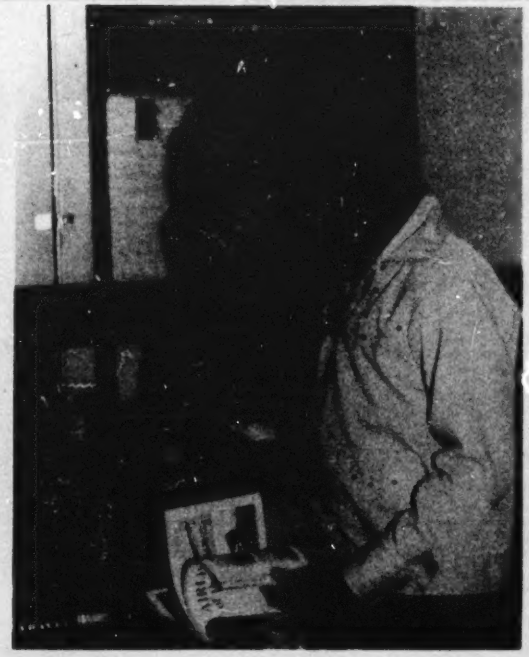
7. To take the drill out, turn the drill away from you and pull it gently upward.

8. To insert a bit, lock the gear handle with your thumb. Turn the chuck (the chuck holds the bit) until the bit fits and then push the bit in as far as it will go. Close the jaws by turning the chuck until it is tight (or have a friend or someone at the hardware store show you).

Hold drill straight up and down

Conceptualization Phase

The Conceptualization Phase followed the first four to five weeks of exploratory activity. Students were asked to come to carpentry class with a written project plan developed in advance in class or at home. Lessons and discussions during this period dealt with anticipating and solving problems such as how to get materials needed, how to assemble two pieces of wood together, sequence of steps for making a project, and additional information about tools and equipment. The following "lessons" can be presented either in sequence or as problems arise.



Making project plans

18

Procedure for Placing Orders

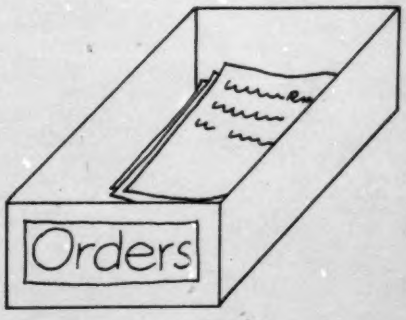
Procedure

1. Place orders for the following items (Margo made signs showing each labeled item):
   - wheels
   - hardware
     screw hooks — 1", 1¼"
     "L" hooks — ½", 1¼"
     corrugated fasteners
   - screws
   - doweling — 1", ¾", ½", ¼"
   - special tools
2. Place orders at the beginning of the period.
3. Write your name, room number, item needed, kind, size and amount.
4. Place order in "Order Box" (a small shoe box labeled "orders" can be used).
5. Orders are usually filled once half way through the period.

Sample order

Carol Roberts Room 202

4 | 2" grooved wheels



How to Nail Two Pieces of Wood Together

Procedure

1. Try nailing a thick piece of wood to a thin one. What happens?

2. Now try nailing a thin piece of wood to a thick one. Which way is most effective? Why?
   Note: Nailing a thin piece of wood to a thick piece works better since it gives the nail more wood to sink into.

3. Hammer the nails in until the points just begin to show on the other side. (This step is easier when you mark off the thickness of the wood first. Then you can center the nails.)

4. If you get stuck, ask a partner to help you by holding the wood. Or stack wood up underneath high enough to steady the wood.

5. Drive the nails in all the way to fasten the two pieces of wood together.

6. Did it work? If not, check the following:
   a. Are any of the nails too close to the edge?
   b. Is the nail the right size?

Drive the nails until the points show through. Then join the two pieces of wood.

20

Widths of Wood

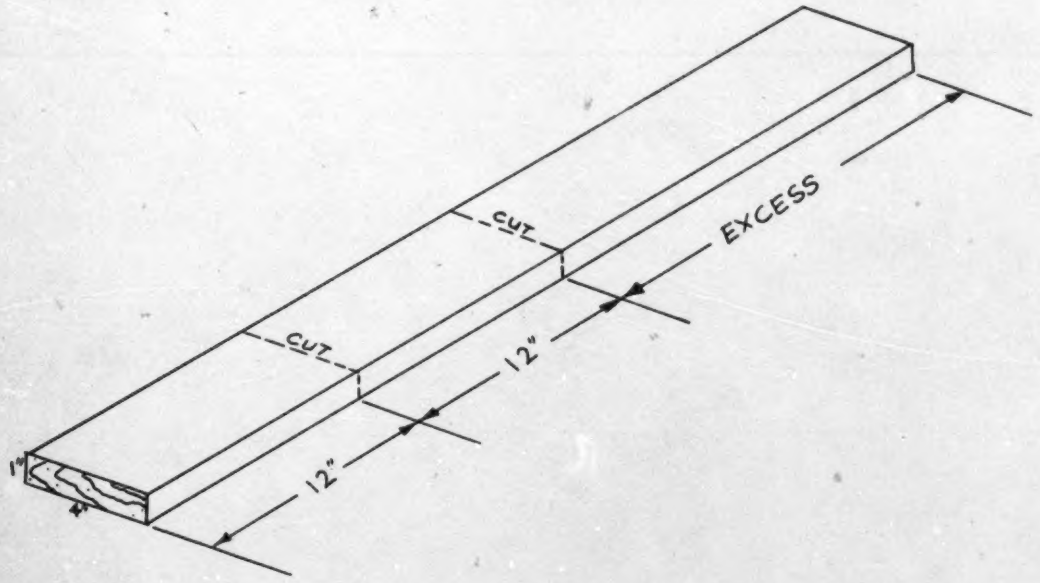
Procedure

1. When you buy a 2" x 4" at the lumber store, the 2" means that the wood is 2" thick and the 4" means that it is 4" wide. The "x" means "by" and the figures are read "2 by 4".

2. Measure a 2 x 4 piece of wood. What did you find out? Can you guess why it actually measures less than 2 x 4? (The board was 2 x 4 when it was first cut, but it shrank down after it was dried and then planed down.)

3. Figure out how much lumber you'll need for your project. Lumber is usually cut into boards from 2 to 12 inches wide and is sold in even-numbered lengths, beginning with 4 feet.

4. What sizes of lumber will you need for a project that uses two 12" pieces of 1" x 4"? (one 4' board, 1 x 4).



21

Putting on Wheels

Materials Needed

- wheels of varying sizes
  - 2½" grooved wheel
  - 2" grooved wheel
  - 2½" oval wheel
- screwdriver or hand drill
- nails
- wood

Procedure

1. Make a pilot hole first using a hammer and nail. The hole should be narrower than the screw so that the screw bites into the wood.

2. Hammer your nail in as straight as possible. (Try putting in a screw even if the nail didn't go in straight. What happens?)

3. Remove your nail.

4. Hold the wood between your legs to steady it. Use a screwdriver to fasten the screw to hold your wheel.

5. Try making a pilot hole with a hand drill. Does it work better to use a hand drill or a hammer and nail for your pilot hole?

Fasten wheels with screws

When to put on wheels

1. Try putting your wheels on first before the rest of your car is complete. What happens?

2. Try making one pilot hole at a time and then fastening your wheel. What happened to your wheels?

3. Try making all four pilot holes and then fastening the wheels using screws.

4. Which sequence works best? Why?

To the Teacher: Margo let students nail on their wheels at first in any order they chose. Later she discussed results with students. They discovered that wheels were more durable if fastened with screws rather than nails and that it worked best if all four pilot holes were made before inserting screws. Otherwise, as students and teachers discovered, wheels got smashed.*

**Don't read the note to the teacher until you've tried putting on wheels yourself first!*

DON'T

DON'T

23

Curriculum

People Who Use Tools

A Career Education Unit for Grades K-3

To the Teacher:

The curriculum section which follows includes a series of lessons designed to expand skills and aspirations of girls and boys. The theme of ***People Who Use Tools*** provides a way of looking at what kinds of people use what kinds of tools to make and do things. Activities related to this theme will focus on the limitations of sex role stereotyping and the need for acquiring skills based on capability and interest in order to become self-sufficient individuals.

Lessons 1 and 2 are concerned with making supplies needed for carpentry workshop, namely a carpenter's apron and a journal for recording plans and progress. Both girls and boys are involved in sewing, traditionally a female skill, used here to make aprons needed for storing tools and hardware. Lesson 3 How I Use Tools *and* 4 Things I Can Make With Tools *reinforce the concept of girls and boys being equally competent in using tools. Most books available in libraries and bookstores on using tools show males using tools but not females. In a few cases where girls are included in the illustrations, they are portrayed in assisting roles, such as in one photograph of a girl holding the wood steady while the boy is hammering. The product of Lesson 3 is a class scrapbook showing both girls and boys making things with tools. The scrapbook presents a positive option to the limitations of most commercial textbooks and guides to using tools.*

Our experience in the series of carpentry workshops has shown that girls and boys chose to make different projects. Boys tended to make more cars, trucks, and planes while girls made more doll furniture or cars for younger brothers rather than for themselves. Lesson 5 involves making a graph to show what kinds of things girls make and boys make in carpentry and discussing the implications of the results. Lessons 6 and 7 are crucial as follow-up to Lessons 3, 4, and 5. Lesson 5 indicates the extent of sex role stereotyping while Lesson 6 Fable of He and She shows how stereotyping occurs and the ways in which it limits people in life situations. Lesson 7 Here's How *then introduces a new mode of exchanging skills in the form of pairs of girls and boys working together, often uncommon in elementary school classroom experiences. The next section,* ***Stories To Grow By,*** presents a sampling of stories and activities about people who use a range of physical, mechanical, intellectual, and emotional tools to do their work.

Lesson 1 — Making a Carpenter's Apron

To the Teacher: The lessons that follow are written as though you were talking directly to your students.

Purposes

1. To make a carpenter's apron for storing hardware, small tools, and plans
2. To involve both girls and boys in sewing as a self-sufficiency skill

Materials Needed

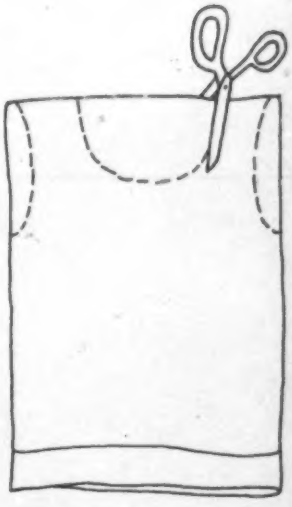
Each student will need:

- 1 pillowcase
- a scrap of fabric about 9 x 14
- needle and thread
- scissors
- pencils

For the class:

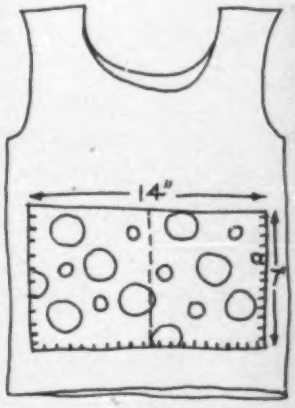
- masking tape
- sharp scissors
- yarn needles and yarn
- sewing machine (optional)

Note: Have students bring in pillowcases and supplies several days before the lesson. The day before, cut slit in closed end of pillowcase for neck and cut openings along each side for armholes.



Procedure

1. Where do carpenters store their tools and nails and pencils? (pockets, belt pouches, tool boxes, etc.) Carpenters often wear aprons with large pockets for storing their tools and supplies. We're going to make carpenters' aprons for our journals and pencils too. We'll make big pockets on them to put tools, nails, and plans in.
2. Cut a 9 x 14 rectangle for your pocket. (Use paper bag pattern)
3. Fold your pocket in half crosswise and mark the center at the top and bottom.
4. Lay your pocket across the bottom half of your carpenter's apron and fasten it to your pillowcase with masking tape.



5. Thread your needle and make a knot at the end of your thread. Using an overlap stitch, sew the pocket on three sides, leaving the top open.

6. Draw a line to connect your pencil marks to divide the pocket into two pockets. (Note: You may want to extend this step into a lesson on fractions.) Sew a running stitch from top to bottom of your pocket along this line.

7. Optional:
   a. Teach students how to embroider their initials on their aprons.
   b. Add additional embroidery, beadwork or design in permanent color pen or "Fabric Crayons" (by Crayola).
   c. Make a design using regular crayon with heavy solid marks. Make design permanent by ironing over it with a sheet of wax paper.

8. Make pockets more durable by sewing alongside overlap stitch on sewing machine.

Lesson 2 — I Can Use Tools

Purpose

To make a journal for recording progress in carpentry workshop, project plans, and related vocabulary words

Materials Needed

For each student:

- 1 sheet of colored construction paper, 8½ x 11
- blank paper
- ruled paper
- pencils
- crayons

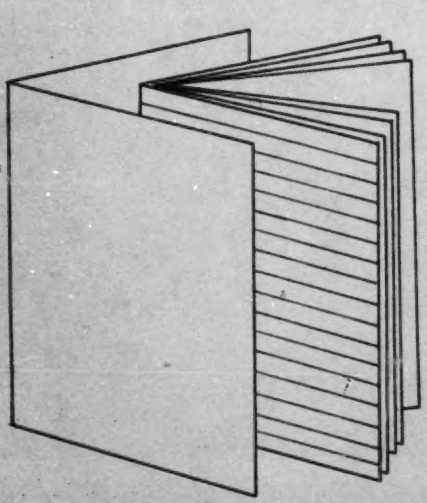
Procedure

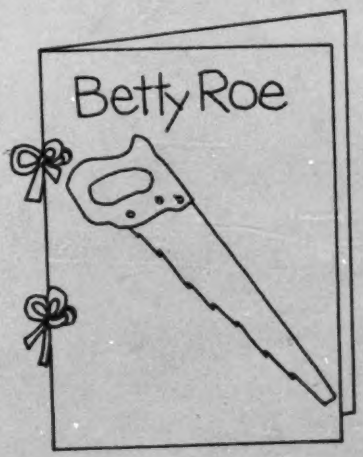
1. Fold your construction paper in half crosswise. Put your name at the top. This will be the cover for your journal. You can use it to keep a record of the tools you can use and the skills you have learned in carpentry workshop.

2. Draw a picture of a tool you know how to use on the cover. Or draw a picture of a tool you would like to learn how to use.

3. Use about 12 sheets of paper in your journal. Alternate blank paper and ruled paper so that you can sketch your projects and then list the materials you will need. Stack the paper and fold in half.

4. Punch in two places and tie with yarn or staple along the top and bottom.





5. Label the first section "Tools I Can Use". Divide your paper into two columns. On the left side write, "Name of Tool". On the right side write "I Can Use It". As you learn to use a tool, write down the name of the tool in the left hand column and make an "X" mark in the right hand column when you learn to use it competently and safely. Check off as you learn to use it:

TOOLS	I can use it
hammer	x
crosscut saw	
C- clamp	x
safety block	x
coping saw	
keyhole saw	x
brace and bit	x
drill	
try square	x

6. Suggested 2nd-3rd grade vocabulary words used by Myra Akins, one of the participating teachers. She had students use the words for making project plans, writing sentences, stories, describing photographs, and playing word games such as "Around the World":

nails	screwdriver	clamp
screws	sandpaper	hammer
grooved	safety block	coping saw
wheels	measure	scissors
oval	brace	pliers
inch	drill	try square
hook		

Lesson 3 — How I Use Tools

Purpose

To make a class scrapbook showing girls and boys making things with tools

Materials Needed

For each student:

- one sheet of construction paper, 8½ x 11
- crayons
- ruled paper

For the class:

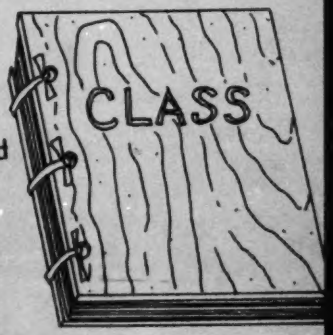
- 2 pieces of thin ¼" plywood, 11 x 14 with 3 holes

Procedure

1. List on the board all the tools used in carpentry workshop.
2. Draw a picture of yourself using one tool. Make it large enough to fill the paper. It doesn't matter if it doesn't look exactly like you. The important thing is that it shows you using a tool.
3. At the bottom of your picture write "My name is Carol Jensen. I can use a (_____)."
4. Now write a description of how you use the tool in the picture.
5. Glue your written description onto the back of your picture.

Instructions for making scrapbook

1. Use a brace and bit to make holes along one side of each piece of plywood.
2. Punch corresponding holes in student's work along one side of paper.
3. Make a scrapbook using the plywood sheets as a binder for the class pictures and writing.
4. Fasten with metal rings, yarn, leather tong, or shoelaces.
5. Have students decorate cover or burn with propane torch for interesting effects.
6. Have students guess which tool each student is using. Then have students share descriptions with class.



Lesson 4 — Things I Can Make With Tools

Purposes

1. To make a fold-out illustrating how to make something using carpentry tools
2. To describe (oral or written) how to make something out of wood
3. To reinforce concept of girls and boys being equally competent in using tools

Materials Needed

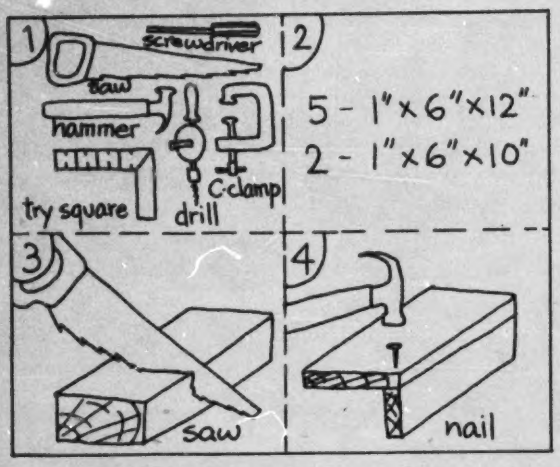
- paper
- pencils
- tagboard
- fine point felt-tip marking pens or crayons
- rulers

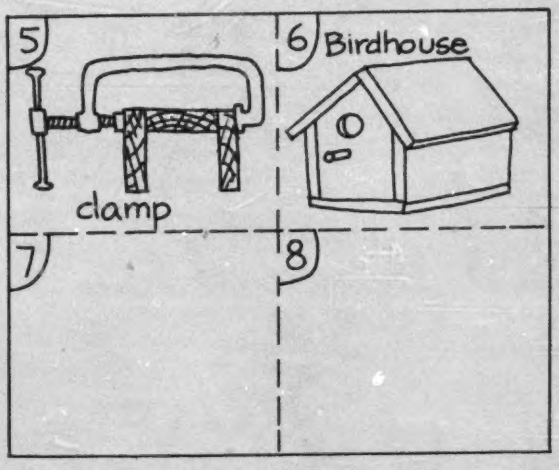
Procedure

To make plans for fold-out:

1. Fold a blank sheet (8½ x 11 or larger) of paper in half crosswise. Fold it in half again. Number each section from 1-4 working from left to right.
2. Think of one thing you made in carpentry workshop that you felt good about.
3. In the first quarter of your paper (from left to right) draw a picture of the tools you will need to make your project. Print the names of the tools under each picture.
4. In section 2 write the number of pieces of wood and the sizes of each piece you will need.
5. In sections 3 and 4 draw pictures of the first two things to do to make your project.
6. If there are more than two steps to finish your project, number the back of your paper 5-8 and continue your directions on the back.
7. In the last square, make a picture of your final product. Write the name of the object under your picture.

8. Be sure to check all your steps to make sure the order is correct. For example, if you are making a car you will need to put all four wheels on after the rest of the car is made so the wheels don't get smashed.





To make fold-out:

1. Use a large piece of tagboard 12 x 16 or larger if available (or construction paper). Beginning at one end, make a 4" crosswise fold. Now fold paper back and forth like an accordion.

2. Use the drawings you just made as your plans. Copy your plans on the paper you just folded using marking pens or crayons. Make sure your directions are clear.

3. Explain how to make your project to a partner or to the class using your fold-out. If you can, write down your directions to go with each picture. Keep your fold-out in a safe place. You will need it again in Lesson 6.

Lesson 5 — What Do Girls Make With Tools? What Do Boys Make?

To the Teacher:

It is our experience that girls and boys tend to make different projects in carpentry workshop. Lesson 5 presents one way of looking at the extent of sex role stereotyping in choices of carpentry projects. Lessons 4 and 5 are crucial preparation for Lessons 6 and 7 which look at how stereotyping occurs, how it can handicap people, and what we can do to expand sex role images.

Purpose

To make a graph to show what kinds of things girls make and boys make in carpentry and to discuss the implications of the graph

Materials Needed

- chart-size graph paper (preferably on tagboard)
- marking pens of different colors

Procedure

1. Ask students, "What kinds of things have you made so far in carpentry workshop?" List results on the board.

2. Make a color bar graph to compare choice of projects made by girls and boys as illustrated on the following page.

Discussion

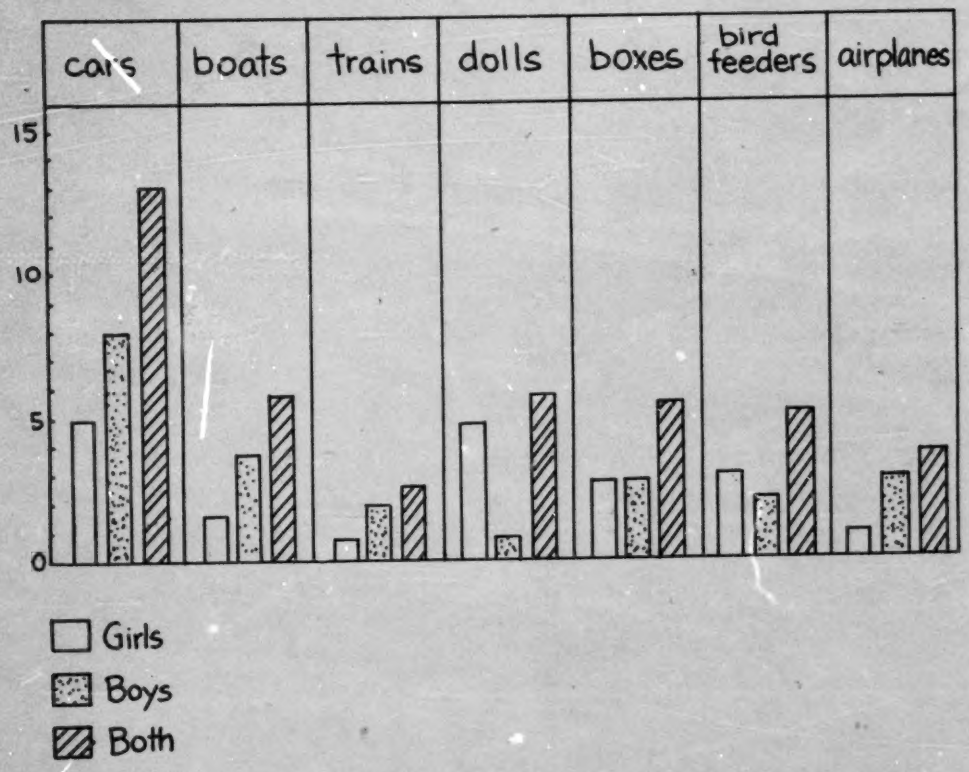
1. Look at our graph. Add the total of students who made each item. What project did both girls and boys make most often?

2. Which things do girls make more often than boys? Why do you think so?

3. Which things do boys make more often than girls? Why?

4. Is there a difference between what girls made and what boys made? What is the difference?

5. Can you think of something on the list that you haven't made that you would like to make?



Lesson 6 — The Fable of He and She

Purposes

1. To show how sex role stereotyping occurs
2. To show how sex role stereotyping handicaps people in life situations
3. To show females and males sharing skills and working together

Materials Needed

The story based on the film, "The Fable of He and She" (see pp. 37 following)
Optional: "The Fable of He and She", an animated 11-minute film, is available from Learning Corporation of America for rental or purchase.

Summary

On an island live two kinds of creatures, the "hardybars", who hunt and build and the "mushamels", who cook and take care of the children. When the island is split in two by a storm, everyone has to learn to do everything. When the hardybars and mushamels are reunited, they share their newly acquired skills in a spirit of cooperation.

The Fable of He and She — *film adaptation by Lyn Reese*

A long time ago, on an island called Baramel there lived wonderful birds and beasts. Among them were the savage chuck-a-chuck, the fierce mushmoo and the wild melachuck. On the island there were two kinds of people, hardybars and mushamels. There were old and young hardybars and mushamels and they lived together in families. The hardybars did all the building and hunting.

"Mushamels are too timid to face the fierce melachucks," they said.

"Right," said the mushamels.

"They are too soft to escape the fangs of the awful chuck-a-chuck. We are strong, we will hunt," declared the hardybars. "Mushamels don't know how to build houses. So we will build all the houses that need to be built."

"Oh, yes," said the mushamels.

Only one hardybar, called He-bar, wanted to do things differently.

"Can't we do some cooking? Can't we make houses pretty? Put some paint on them?"

"He-bar, hardybars do not paint. That is not a hardybar thing to do," cried all the others. So he didn't.

The mushamels were best at cooking and watching babies.

"Mushamels make things sweet and nice. That's what all mushamels like to do best," they said.

Only one mushamel, She-mel disagreed.

"Oh, not me, I'd rather be fighting chuck-a-chucks instead of standing over a stove in a hot kitchen all day."

The other mushamels groaned, "She's so peculiar. So odd." So She-mel didn't do what she wanted.

Each year in Baramel there was a great holiday called Om-pah Day. The hardybars went to one end of the island to celebrate, the mushamels to the other. Each held all sorts of contests. The hardybars had contests in sawing wood, pole climbing, and mushmoo catching. The fastest and bravest hardybar was named hardybar of the year. The mushamels held contests too. Their contests were in gardening, cooking, dancing and beauty. The winner, with cheers and tears, became mushamel of the year.

Suddenly, in the midst of the festivities, disaster struck! The skies darkened, the wind blew, lightening struck. Then, with a shudder and a shake — earthquake! And the island split in two!

When the storm was over, much to their surprise, the hardybars found themselves separated from the mushamels by a huge body of water. And there was no way to reach each other across that cold and swift ocean.

"What are we going to do. We need houses," the mushamels loudly cried.

"I can't hunt chuck-a-chuck," said one.

"I can't build shelters," said another.

"We'll freeze," they all said.

Then She-mel took charge.

"Hold it everyone and stop crying! I, for one, do not plan to freeze — or starve. Come on."

Finding clay, She-mel constructed a sturdy hut. In front she planted some flowers.

"Oh, yea for She-mel," everybody cheered.

"And now, we're going hunting."

"Now She-mel, you're going too far," said an older mushamel. "Only hardybars can face the fierce mushmoo."

"Don't worry, I have a plan."

She-mel had everyone sneak up to the nearest mushmoo and surround it.

"Now, everybody sing as loud and high as you can," she commanded.

All did as they were told and the noise was so piercing that the mushmoo roared and stamped and fell over dead.

"Hey, we did it!" cheered the mushamels.

Meanwhile, the hardybars had problems of their own.

"If those children don't stop crying I'll lose my mind," moaned one. "Be quiet, be quiet! Oh, I hate little children."

That made He-bar speak up. "Wait, that doesn't work very well. I have an idea."

And he made some clever swing which held the children firmly and kept them happy. The children were happy, the adults were delighted.

"Hooray for He-bar," everybody cheered.

"Okay, hardybars, dinnertime," one hungry person called.

"Oh, dear, hardybars can't cook," was the reply.

"I believe I could whip up a little something," said He-bar. Get me some pom-pom berries, a kettle and dig a hole."

He-bar's first meal was chuck-a-chuck and pom-pom berry stew in peanut butter sauce. But little by little all the hardybars learned and their cooking improved.

Time passed. Hardybars and mushamels lived separately on each side of the great gap. Then one day — REVERSEQUAKE! A great force pushed the island together again. With much kissing, the two groups were united.

"Now that we're together again, everything will return to normal," said one hardybar.

"Oh no, things are going to be different. We've learned to do some new things. Watch!"

And the mushamels showed them how they built their houses.

"Wow. Interesting construction technique," commented the hardybars. "Let's show the mushamels what we can do!"

Soon the hardybars announced, "Fried chuck-a-chuck pie with pom-pom pudding topped with creamy mushmoo whip."

"Mmm," sighed the mushamels.

From then on things were different in the land of Baramel. Both hardybars and mushamels built homes, hunted, cooked, planted gardens and tended children. And they both shared with each other new ways to do their work.

That year, on Om-pah Day, everyone was grateful to He-bar and She-mel for helping them change their ways.

"The prize of hardybar of the year goes to He-bar and the prize of mushamel of the year goes to She-mel."

"Yea, yea." Everybody was happy with the choices.

The people wanted the names of He-bar and She-mel to be remembered. So from then on they called all hardybars "he" and all mushamels "she". And so they still are called in Baramel — and in a few other places.

Follow-up Activities for "The Fable of He and She"

Discussion

1. Make two charts on the board. Label one "Before Storm" and label the other "After Storm". List jobs done by the mushamels and the hardybars before and after the storm.

2. How do the mushamels and the hardybars feel about sharing their skills after the storm? How do their attitudes change?

Creative Dramatics

1. Divide the class into four groups of about six students each

2. Ask each group to practice and act out the following scenes:
   a. Before the Storm — showing divided roles of mushamels and hardybars
   b. First Celebration — showing respective contests for mushamels (cooking, beauty) and hardybars (building and hunting) and crowning of king and queen
   c. After the Storm — showing each group learning new skills
   d Second Celebration — sharing of skills, crowning of She-mel and He-bar

Art

Make puppets, clay or playdough figures for acting out the story. Follow procedure for "Creative Dramatics" above.

Oral/Written

See Appendix B.

Lesson 7 — Here's How

To the Teacher:

Lessons 4, 5 and 6 provide important preparation for exploring the limits of doing things solely because of a defined sex role. Lesson 7 shows how to apply the idea of sharing skills in order to realize a common goal.

Purpose

To have pairs of girls and boys show each other how to make something out of wood

Materials Needed

- Fold-outs from Lesson 4 provide the project plans
- lumber of varying sizes
- nails of varying sizes
- wheels of varying sizes
- saws
- hammers
- C-clamps
- try squares
- coping saw
- drill
- brace and bits

Procedure

1. Explain that one of the purposes of this activity is to share skills with someone else in the class. Have class work in partners of girls and boys. Assign one person to be the carpenter and the other the apprentice. Tell your students that each person will have a chance to be both a carpenter and an apprentice.

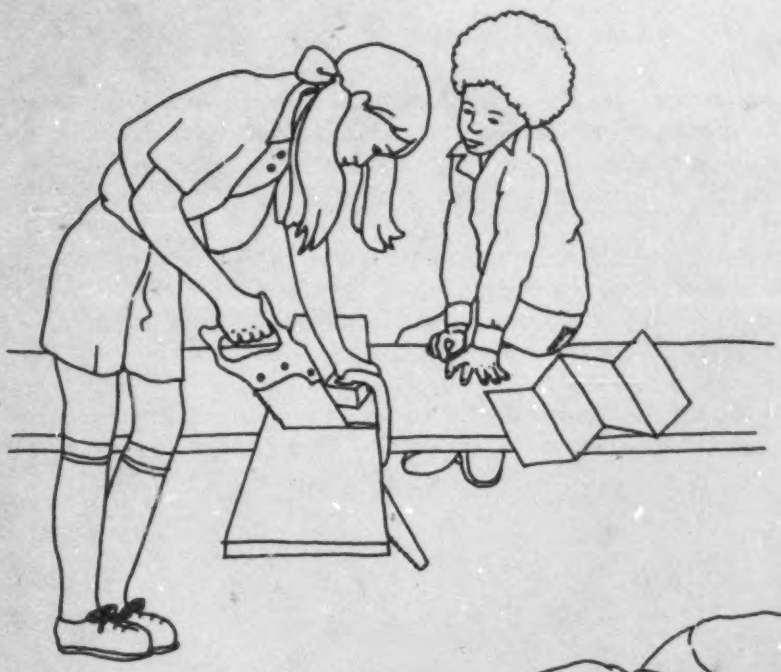
2. Use your fold-out to teach your partner how to make something that you experienced success in making.

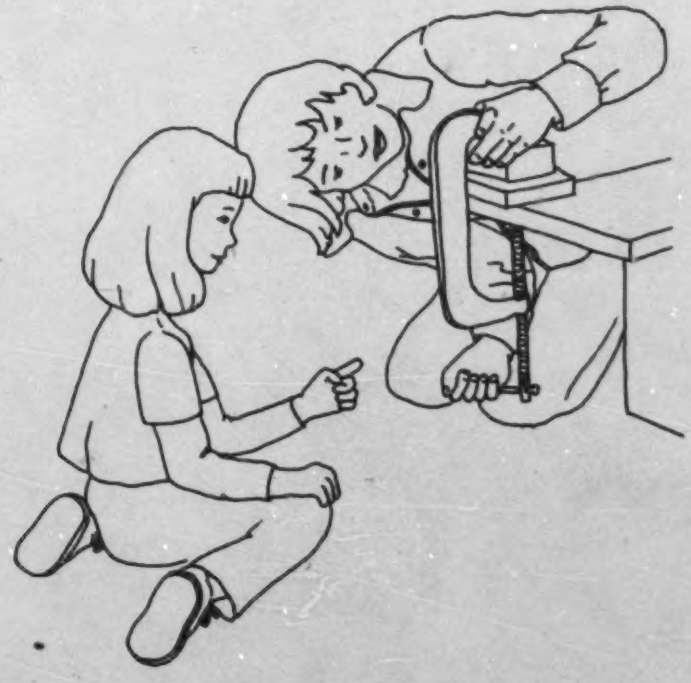
3. Go over the lsit of materials needed with your partner. Explain each step in the fold-out briefly and show your partner what you made. Get the wood you will need. Help your partner measure it and cut it to size.

4. Follow the illustrations and instructions in your fold-out as you show your partner how to assemble the pieces. Try to show the other person how you made your project without doing it for him or her.

5 .Follow-up project: Working with the same partner, switch roles. The person who was the carpenter now becomes the apprentice and vice versa. The new carpenter

now teaches his or her apprentice how to make something out of wood following the same procedure as before.





Stories To Grow By

To the Teacher:

The following section includes a sample of multi-ethnic stories and follow-up activities for expanding aspirations. They are not sequenced since you may want to choose those that would be most effective for your own students and curriculum. (For additional books see "Supplementary Resources", p. 56).

The stories are related to the theme of **People Who Use Tools**. The word "tools" is used broadly here to mean those physical, mechanical, intellectual and emotional aids for an activity. The first two stories introduce women at work, one an architect, the other a TV producer. The third story, a humorous tale of female wrestlers, shows that female strength is not to be taken lightly. The fourth story presents a girl who leads her friends on an adventurous hike. And the last story, about a boy who takes care of his baby brother, presents one way of preparing boys for the job of caring for a family.

What Can You Be?

Purpose

To find out about the kind of work a woman does as an architect

Materials Needed

What Can She Be? An Architect, by Gloria and Esther Goldrich, Lothrup What Can She Be Series, 1974. Follows Susan Brody, an architect, as she works.

Procedure

1. Read *What Can She Be? An Architect,* to your class.

2. Ask, what are the tools Susan Brody uses in her work?

   measuring tools
   drafting tools
   drafting board
   building materials
   architect's license

3. Can you think of other tools that Susan uses that she carries in her head? (knowledge of mathematics, art, construction, understanding of people's needs and wants, sense of beauty)

4. What part of Susan's work is most interesting to you? Draw a picture of something Susan does that you would like to do.

5. "What Can You Be?" activity. See Appendix B.

What It's Like To Be a TV Producer

Purpose

To find out about the kind of work a woman does as a TV producer

Materials Needed

What It's Like To Be a TV Producer, by Arthur Shay (Reily and Lee Books, Chicago, 1973). Describes the various activities of a Rae Moore, a Black woman who produces and stars in her own television show.

Procedure

1. Read *What It's Like To Be a TV Producer* to your students.

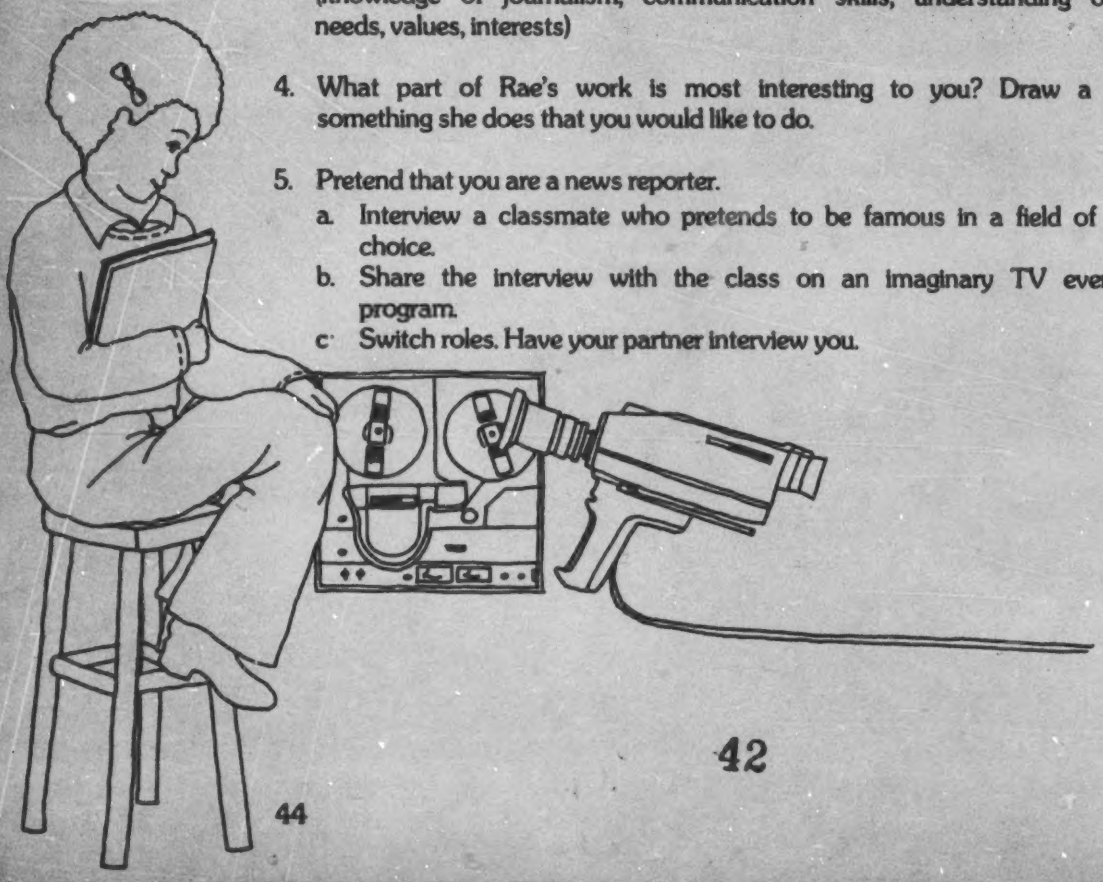
2. Ask, what are the tools that Rae Moore uses in her work?

television	magazines
cameras	books
production equipment	newspapers

3. Can you think of other tools that Rae uses that she carries in her head? (knowledge of journalism, communication skills, understanding of people's needs, values, interests)

4. What part of Rae's work is most interesting to you? Draw a picture of something she does that you would like to do.

5. Pretend that you are a news reporter.
   a. Interview a classmate who pretends to be famous in a field of his or her choice.
   b. Share the interview with the class on an imaginary TV evening news program.
   c. Switch roles. Have your partner interview you.



Three Strong Women, A Tall Tale from Japan

Purpose

1. To show that women can be physically and emotionally strong
2. To show that women and men can learn from each other

Materials Needed

Three Strong Women, by Claus Stamm, The Viking Press, New York, 1962 (paperback)

or

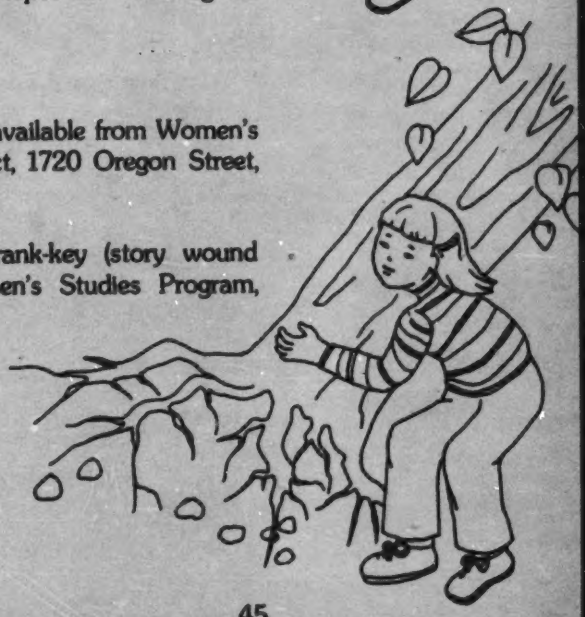
Womenfolk and Fairy Tales, Rosemary Minard, editor, Houghton Mifflin Company, Boston, 1975, pp. 93-105

Procedure

1. Read *Three Strong Women* to your class.
2. Ask, how does Maru-me fool Forever Mountain when she meets him?
3. Is the grandmother in the story like your grandmother or any grandmother you know? Why or why not?
4. What do the three women do as wrestling coaches to train Forever Mountain?
5. How is the Emperor different from most emperors? (He hopes the wrestling will end quickly so he can go to his room and write poems.)

Optional

1. Body movement for girls and boys, a series of activities available from Women's Studies Program Office, Berkeley Unified School District, 1720 Oregon Street, Berkeley, California 94703.
2. Use the story, *Three Strong Women* to make a Crank-key (story wound through a "TV" box); lesson available through Women's Studies Program, address above.



Yolanda's Hike

Purpose:

To have girls and boys identify with a position of leadership

Materials Needed:

Yolanda's Hike, Tomas Rodriguez Gaspar, New Seed Press, 1974. Written in Spanish and English. Yolanda is a group leader on a hike up Mt. Treetop.

To the Teacher: If "Yolanda's Hike" is not available, see "Alternative Lesson" below.

Procedure:

1. Read the story *Yolanda's Hike* to your class.
2. Ask, what are her responsibilities as group leader?
3. What tools does Yolanda use to lead her friends on the hike?

canteen	knapsack
a stick	good judgment
belt	

4. How does she use each tool?
5. Explain one problem Yolanda and her friends encounter.
   How do they solve their problem?
   What would you do if you were Yolanda?

Alternative Lesson

1. Pretend you are leading your friends on a hike up a mountain.
2. What will you take with you?
3. Describe your adventures (oral or written).
4. Pretend
   a. You find a cave on your hike. What do you see? What do you do?
      or
   b. You are on your way home and you come to a fork in the road. You are not sure which way to go. What do you do?

Go and Hush the Baby

(adapted from lesson by Francina West, Women's Studies Program, Berkeley Unified School District)

Purpose

To discuss the feelings boys and girls have when they are called upon to perform the traditionally female job of taking care of a baby.

Materials Needed

1. *Go and Hush the Baby*, Betsy Byars, Viking Press, New York, 1973. Boy takes care of baby while his mother paints and bakes

2. Baby doll (or real baby) for role-playing activity

Procedure

1. Opener: "Have you ever had a baby in your home? Take a moment and think about your family or one you know of and tell me what different members do when their baby suddenly begins to cry."

2. Read the story to your students.

Discussion

1. What are the different things Will did to entertain the baby? (list on board)

2. In most families who usually goes to quiet the baby? Why do you think that person(s) usually does it?

3. In our story why do you suppose the baby began to cry?

4. How do you think Will's mother felt when the baby began to cry? Why do you think she felt that way?

5. Why do you think Will's mother asked him to quiet the baby?

6. How do you think Will felt taking care of a baby? Why do you think he felt that way?

7. Make a list of things you would use to take care of a baby. Which things could you call "tools"? Why?

Role-Playing

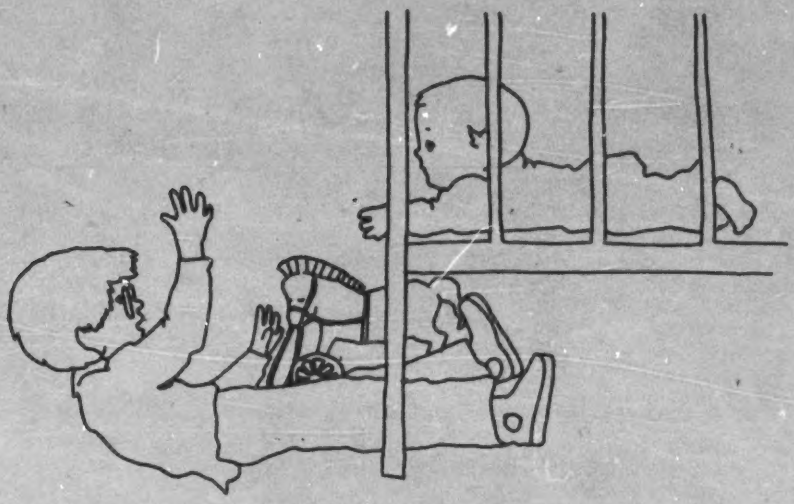
1. Pretend that this doll is a live baby. When you are handed the baby, entertain the

baby by doing something that you think a baby would really enjoy. (Adapt accordingly if a real baby is available.)

2. How did you feel when you were called on to quiet the baby? Why do you think you felt that way?

3. At home do you think that girls can help take care of a baby? Why is it important for them to help (or not help)?

4. At home do you think that boys can help take care of a baby? Why is it important for them to help (or not help)?



Carpenters at Work

Use the following activities with the set of photographs in Appendix C.

Discussion Questions

1. What kinds of things do you see people in the photographs making?

2. What kinds of tools are they using?

3. How do you think _____ (choose one picture) feels about his/her work?

4. Which tools would you like to use? What would you make?

5. What do you want to be when you grow up? If you were a girl/boy would you choose the same job? What do you know now that is a beginning preparation for your job? What will you need to know? What is going to be the best part of your job? the hardest part?

Activities

1. Can you imagine?

   Example: Girl Putting Wheels on Her Car
   a. Create a vehicle out of wood or make up an imaginary one. Describe your vehicle and your adventures riding it.
   b. Describe an experience you had while riding your _____.
   c. Your vehicle broke down. Describe how you are going to solve your problem.

2. Sentence Starters
   Example:
   When I grow up I want to . . .
   I would like to be able to . . .

3. Carpenter-Apprentice
   Choose a tool you see in one of the photographs. Show someone in your family how to use it.

Role Models

1. Invite role models to speak to your class. Include men and women who do atypical things such as welders, carpenters, administrators, dentists and/or bicycle repair mechanics who are women and secretaries, telephone operators, dancers and/or poets who are men.

2. Have students write down questions to ask guest in advance.

3. Ask the speaker to bring tools and special equipment used on the job and, if possible, to demonstrate some aspect(s) of his/her work.

Field Trips

Visit a local hardware store and/or lumber yard.

1. Make a list of questions regarding a carpentry project you are working on before you go. Ask a clerk to help you. Discuss your experience with your class.
2. Make a list of items you want to buy or get information about at each place.
3. Count the number of women who work there. What do they do?
4. Count the number of men who work there. What do they do?
5. Graph and discuss results.
6. Use Lessons 6 and following to present alternatives to sex role socialization.

Evaluation

The carpentry program was undertaken to effect change in three areas: 1) skill acquisition, 2) role-modeling, and 3) expanding aspirations. In the area of skill acquisition the emphasis was on increasing physical competence of girls and boys in using hand tools, a skill traditionally blocked to girls. Success in this aspect of the project was demonstrated by respect building between girls and boys, teachers and students, over the course of the workshop series. At the beginning of the program, boys generally demonstrated more confidence although both girls and boys appeared to be at the same skill levels. Boys seemed more afraid to ask for help, perhaps because they thought of carpentry as an area in which they were expected to have some expertise. By the end of the project teachers reported that both girls and boys attempted equally difficult projects. Several students who were under-achieving in class did well in carpentry, improving in skills and gaining strength and coordination. Teachers generally reported that girls and boys respected each other's work as individuals. The emphasis was on "How satisfied are you with the job you did?", "Can you use what you made?", and "Will you share it with me?". Students interviewed during and after the program reported that they felt quite comfortable using hand tools. Several girls as well as boys indicated that either they were already extending their skills by continuing to use hand tools at home or that they planned to borrow or buy tools so that they could continue carrying out project ideas. Demonstration of skill acquisition was apparent in the carpentry fair, a culminating activity for the carpentry program. Planned by teachers and students together with Margo and Mildred, the fair was a display of carpentry projects and related materials such as stories, poems and pictures. Each class was assigned an area of the auditorium and was responsible for labeling, arranging and displaying their projects. All classes at John Muir were invited and attended on a staggered schedule. Parents, sisters, brothers, and friends of students also attended. Projects included cars, trucks, and planes, doll furniture, a model city, a puppet theatre, a variety of games, and a pool table. Respect for "carpenters" was apparent, especially as a group of boys questioned the girls who had designed and built the city. "Who made that?" the boys asked.

"We did," they responded proudly.

The second major goal of the program was role-modeling in the following three areas:

1) Margo Nanny as carpentry instructor teaching carpentry, a non-traditional skill for women.

2) Training participating teachers to be role models, teaching their own students (and subsequent classes) carpentry skills.

3) Training girls and boys to be role models to other students, friends and members of their families.

Margo was highly effective as an instructor teaching students to use hand tools. One student observed, "Our teacher's name is Margo and she tells us all about things that we should know about the tools and wood .... We learned that you are supposed to pull the saw up a few times when you are beginning and *then* start sawing." Another student expressed her confidence in her teacher and herself, "I go to carpentry to learn how to use real tools. My class learns from a teacher named Margo. She is a good teacher. I made a houseboat using a hammer, wood, sandpaper, glue, try square and a saw ...."

In order to train teachers to use tools competently and safely, Margo and Mildred held a staff in-service skills workshop open to all interested teachers after school. They demonstrated how to use hand tools and then let teachers explore in much the same way as students did. Some teachers used the time to make projects, games or other aids for their classes while others, using some of the tools for the first time, practiced sawing, hammering and helping one another. Still others made things for themselves. Several teachers who attended the in-service workshop but were not project participants later borrowed tools to use with their classes. Towards the end of the workshop series, one teacher brought her class to carpentry workshop on her own without Margo. Margo was later told by the teacher and students alike that everything went smoothly. Three of the four participating teachers said that they looked forward to using the mobile carts and carpentry supplies and equipment in their own classes next year. The fourth teacher said that she would be interested in using the carpentry tools in a separate room from her classroom, due to problems she felt related to noise, space and clean-up.

In summary, our experience has shown that it is critical to the success of a carpentry program that the teacher be sufficiently trained to teach carpentry and have a basic understanding of how to apply the wider goals of the program in his/her classroom.

During the project, more emphasis was placed on training teachers as role models than on students as role models. One second-grade girl did report teaching her mother to saw, a skill she said her mother always wanted to learn. Moreover, several students came with their tools in hand at the end of the year to offer their services as "carpenters" to take down some coat hooks that needed to be moved. Lesson 7 of the curriculum section *Here's How* presents one option for girls and boys as role models for each other. Another alternative is to have students make toys out of wood to share with or give to younger children. For example, a third grade girl might show her car to a first grader, explain how she made it, and play use it with the younger child. Teachers could also have students teach a member of their family a carpentry skill.

The third major goal of the project was to expand aspirations of girls and boys. Teachers who volunteered for the project were expected to make a commitment to developing curriculum that would expand sex role images. Given the variation in teacher awareness of the nature of sex-role socialization and what to do about the problem, an in-service workshop was scheduled at the onset of the carpentry project. The workshop was led by Susan Groves, Coordinator of the Women's Studies Program, Berkeley

Unified School District. It was held after school for all staff. Susan started out with an explanation of the need for a carpentry program at John Muir School. Several exercises were employed using school site materials to document the perpetuation of rigid sex role images. U.S. history textbooks at the secondary level were utilized, and teachers discovered either the omission or denegration of women. Readers at the elementary level were also examined and likewise revealed an overall imbalance. An overwhelmingly disproportionate number of male-centered to female-centered stories prevails. Boys display character traits generally considered healthy and positive by our society, whereas girls display negative traits. Adequate adult role models are sorely lacking. Adult males are portrayed as job holders and fathers, while adult females are *either* job holders *or* mothers, rarely both.

The impact of using such readers and textbooks can be demonstrated by the progressively narrower options open to girls as they progress through school. By the time they are adults, as women they find themselves concentrated in a limited number of low-paying, dead-end jobs.

The concluding part of the workshop was devoted to a discussion of what teachers and administrators can do, given the nature of the problem. The film, "Changing Images" (see list of "Supplementary Resources") provides an example of what one teacher did to expand aspirations. Curriculum materials available through Women's Studies Program Office, Berkeley Unified School District, offer additional ways. (1720 Oregon Street, Berkeley, California 94703)

Given the fact that schools reinforce the sexist nature of society at large, the problem is pervasive. This guide has provided one model for dealing with the problem. We strongly urge you to develop your own model as a beginning of an ongoing daily effort to develop positive role images in your school and community.

Supplementary Resources
for Expanding Aspirations

—Annotations by Lyn Reese)

Books

All Kinds of Mothers, *Cecily Brownstone*
Mothers do all kinds of different things.

Amelia Earhart, ERC Social Science Program
A biography for young children which describes the courage and skill of our most famous woman pilot.

Boys and Girls, Girls and Boys, *Eve Merriam*
A multi-ethnic group of children play together without limitations of sex roles.

Building a Clubhouse, *Carol Kropnick*
Children may make up their own story to go with the book's pictures of girls and boys building a clubhouse.

Carlotta and the Scientist, *Patricia Riley Lenthall*
A female penguin leaves her husband to take care of the nest while she goes fishing. She meets a female scientist.

Crow Boy, *Taro Yashima*
A boy who is quiet in school is thought to be stupid. He proves everyone wrong.

Did you Ever?, *Paula Goldsmid*
Suggestions of a range of things to be and do.

The Dragon and the Doctor, *Barbara Danish*
A female doctor and a male nurse cure a sick dragon.

Firegirl, *Gibson Rich*
Collection of stories and songs for children to question sex role expectations.

Fresh Fish . . . And Chips, *Jan Andrews*
A mother goes out to catch fish while father prepares the potatoes. Humorous.

Friday Night Is Papa Night, *Ruth Sonneborn*
An anxious boy awaits his Papa's arrival home from work.

Girls Can Be Anything, *Norma Klein*
Shows how girls can be doctors, fly planes and lead countries.

Goldie The Doll Maker, *M.B. Goffstein*
Goldie carries on her family's tradition of carving.

Harriet and the Promised Land, *Jacob Lawrence*
The story of Harriet Tubman and her work helping slaves to escape.

Hurray For Captain Jane, *Sam Reavin*
A girl fantasizes that she is the captain of an ocean liner.

I Am, *Sonia Lisker*
A boy and girl discover that they can be what they want to be. Fast-paced and humorous.

I Want To Be, *Dexter and Patricia Oliver*
Expanding job aspirations for Black students.

Jellybeans for Breakfast, *Miriam Young*
Two little girls plan all the things they will do someday—including a trip to the moon.

Jo, Flo and Yolanda, *Carol de Poix*
Chicana triplets look the same, but have very different aspirations.

The Magic Hat, *Kim Westsmith Chapman*
Girls and boys play happily together until . . .

Maria Tallchief, *Tobi Tobias*
Maria's dedication to dance despite conflicts.

Marian Anderson, *Tobi Tobias*
Story of Black singer who won acclaim in the U.S. only after the rest of the world recognized her as a great contralto.

Mommies At Work, *Eve Merriam*
Shows how mothers can and do work.

Mothers Can Do Anything, *Joe Lasker*
Women in all kinds of jobs.

Nice Little Girls, *Elizabeth Levy*
New in school, Jackie is called a boy because of her appearance and enjoyment of "boys" activities.

Of Course Polly Can Ride A Bike, *Astrid Lindgren*
A determined five-year-old proves that she can ride a bicycle.

Peter Learns to Crochet, *Irene Levinson*
Peter's teacher, Mr. Alvarado, helps him crochet a scarf and mittens for the winter.

Tommy Goes to the Doctor, *Gunilla Wolde*
Tommy examines his teddy bear just as his pediatrician, who is a woman, has examined him. Doctor's instruments illustrated.

Two Piano Tuners, *M.B. Goffstein*
Debbie wants to be a piano tuner like her grandfather.

What Do I Do?, *Norma Simon*
A Puerto Rican girl strives to grow and feel competent.

Women Themselves, *Johanna Johnston*
Short biographies of American women who have shown determination to use all their talents.

Yolanda's Hike, *Tomas Rodriguez Gaspar*
Written in Spanish and English. Yolanda leads her friends on a hike up Mt. Treetop.

Teacher Resources

Brochure of non-sexist, multi-cultural curriculum materials:
Susan Groves, Coordinator
Women's Studies Program Office
Berkeley Unified School District
1720 Oregon Street
Berkeley, California 94703

Carpentry Manual, includes project plans, Women's Studies Program (see address above)

Captain's Hat, K-3 unit based on carpentry program, Women's Studies Program (see address above)

Photographs

Women in Sports, *Change for Children, 2588 Mission Street, No. 226, San Francisco, California 94110*

Men in the Nurturing Role, *Women's Action Alliance, 370 Lexington Avenue, New York, New York 10017*

People at Work, *Change for Children (see address above)*

People at Work, *Women's Action Alliance, Instructo Corporation, Paoli, Pennsylvania 19301*

Games

Judy Puzzles, *General Learning Corporation, Morristown, New Jersey*
Our Helpers, *12 Play People in the Community, Milton Bradley*
Play Lotto Scenes, *Milton Bradley*
Instructo Non-Sexist Community Careers for the Flannel Board

Magazines

Ms.
WomenSports
China Pictorial
Ebony

Films

Anything They Want To Be, *University of California, Extension Media Center, Berkeley, California 94720*

Changing Images, *University of California (see address above)*

I Is For Important, *University of California (see address above)*

Katy, *University of California (see address above)*

Other Women, Other Work, *Churchill Films, 662 N. Robertson Blvd, Los Angeles, California 90069*

People Who Make Things, *Churchill Films (see address above)*

Free to Be You and Me, *Film Rental Library S-2, McGraw-Hill Book Company, Princeton Road, Highstown, New Jersey 08520*

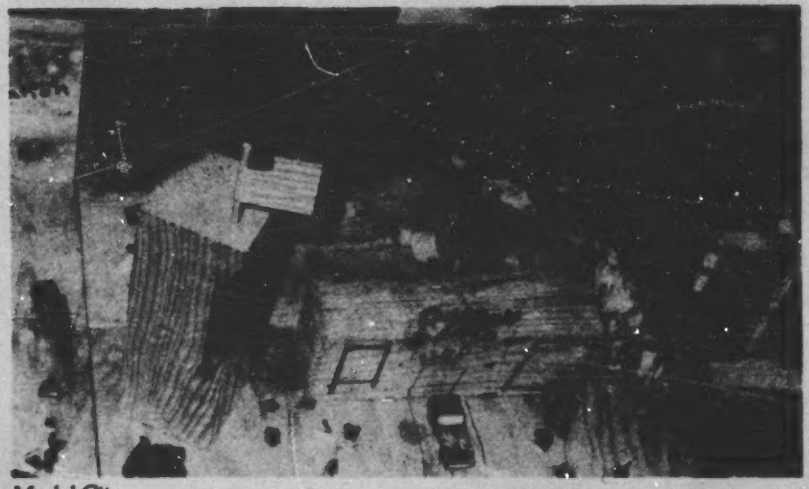
Fable of He and She, *Learning Corporation of America*

APPENDIX A Sample Carpentry Projects

The following pages present some samples of photographs of student work as well as some illustrations of sample projects.

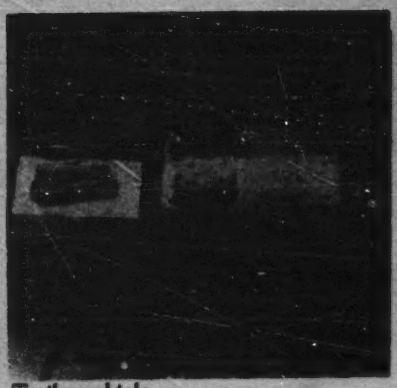
Ollie Mitchell's bird feeder

Hinged box



Model City

Sharing projects



Trailer vehicle

Make-believe television

Sailboat

APPENDIX B Follow-up Activities

To the Teacher:
The following pages may be removed and reproduced for use with students.

1. *Fable of He and She* follow-up activity.
   Use with lesson, p.36.

2. What Can You Be?
   Use with lesson, p.43.

Fable of He and She Follow-up Activity

Pretend you and your friends are in a small sailboat and it's getting dark. There isn't enough wind to get home. You spot an island nearby. You have the following tools and supplies:

- a rope
- a knife
- matches
- 2 cans of tuna
- powdered milk
- a canteen of water
- a compass

Draw a picture showing what you would do and build on the island. Tell or write a story about your experiences.

What Can You Be ?

You will need:

butcher paper
pencil
scissors
glue
magazines

1. Work with a partner. Have your partner lay on the butcher paper on the floor and trace his/her outline. Now have your partner trace your outline.

2. Cut out your outline.

3. Think of something you would like to be when you grow up. Find pictures in old magazines about your work.

4. Cut out pictures about your work and make a collage to fill the outline of your body.

5. Paste your pictures on your outline.

6. Write your name and what kind of work you chose on the back of your outline.

7. Have your classmates guess your work.

APPENDIX C
Carpenters at Work